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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,352	03/24/2003	Simon Powell	215159US2PCT	7905

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EXAMINER
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KITOV, ZEEV

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/926,352

Applicant(s)

POWELL, SIMON

Examiner

Zeev Kitov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 7, 9, 10 is/are rejected.
- 7) ☒ Claim(s) 8, 11 - 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 10 recites the limitation "said planar frame member" in line 17. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the latching means" in line 21. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "said planar active material" in line 25. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Fritz (DE 3723568). Fritz discloses all the elements of Claim 1 including a drive circuit for a residual current device including a differential current transformer (element 2 in Fig. 1) having a first primary coil and a second primary coil (elements 3 and 4 in Fig. 1), and a secondary coil (element 7 in Fig. 1) providing an output drive voltage in response to any

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current imbalance between the respective electric currents flowing in the first and second primary coils. It further discloses the transformer being arranged to be close to the saturation point during normal operation (col. 1, lines 61 – 64) and to cross the saturation point when a differential current is detected (col. 1, line 65 – col. 2, line 7), such that the amplitude of the output voltage across the capacitive measuring element is caused to be higher (col. 2, lines 7 – 8).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in a view of Giardini (DE 2845993). As was stated above, Fritz discloses all the elements of Claim 1. However, regarding Claims 2 and 3 it does not disclose rectifying means connected as a voltage multiplier. Giardini discloses the current transformer having a secondary coil (element 8 in Fig. 3 and 4) connected to the rectifier (elements 11 and 12 in Fig. 3 and 4) connected as a voltage multiplier. Both references have the same problem solving area, namely enhancing a safety in the power distribution networks. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Fritz solution by adding the rectifying

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voltage multiplier stage according to Giardini, because, as well known in the art, high voltages are necessary for driving piezo actuators.

Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in a view of Flanagan textbook, Handbook of Transformer Design and Applications and further in a view of Court Decision *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). As was stated above, Fritz discloses all the elements of Claim 1. However, regarding Claim 4, it does not disclose 50% saturation threshold. Flanagan discloses that the output voltage obtained in the saturated reactor (transformer) is proportional to the degree of saturation (col. Page 14.15, line 8 – page 14.17, line 11). Therefore, Flanagan demonstrated that the degree of the core saturation in the transformer is a result effective variable. A deficiency of the primary reference is compensated by the Court Decision, which states that discovering an optimum value of a result effective variable involves only routine skill in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fritz solution by setting the transformer regime such that in normal conditions it would have 50% of saturation level, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in a view of current design practice. As was stated above, Fritz discloses all the elements of Claim 1. However, regarding Claim 5, it does not disclose a ratio between the

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secondary and primary coils in the transformer. Examiner takes an Official Notice for the fact that to achieve high output voltage at the secondary coil of transformer, the secondary coil of the transformer must have amount of turns bigger than the primary coil. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Fritz by setting amount of turns in the secondary coil bigger than the amount of turns in the primary coils, because it is routine designer's solution based on a knowledge of the Electrical Engineering basics.

Claims 6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in a view of Feller et al. (US 5,886,428). As was stated above, Fritz discloses all the elements of Claim 1. However, regarding Claim 6, it does not disclose an active material bender. Feller et al. disclose a switch or relay used in the circuit breaker (col. 2, lines 20 – 24) and including an active material bender (elements 7 in Fig. 1 – 4, col. 2, line 20 – col. 5, line 11). Both references have the same problem solving area, namely providing circuit breakers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Fritz solution by adding the active material bender, because as Feller et al. state (col. 2, lines 20 – 24), it would provide a high speed circuit breaker with a low voltage release.

Regarding Claim 7, Feller et al. disclose an electrical switching means (shown in Fig. 5, col. 5, line 23 – col. 6, line 31) opening one or more electrical contacts in response to the electrical actuator means when the drive circuit detects a fault condition

in the electrical circuit. A motivation for modification of the primary reference is the same as above.

Regarding Claim 9, Feller et al. disclose a planar active material bender (elements 7a and 7b in Fig. 5, col. 5 – line 23 – col. 6, line 31). A motivation for modification of the primary reference is the same as above.

Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in a view of Feller et al. and further in a view of Brohard (US 4,112,279). As was stated above, Fritz and Feller et al. discloses all the elements of Claims 1, 7 and 9. However, none of them disclose an active bender laminated to a planar frame. Brohard discloses an active material bender (elements 11, 14 and 12 in Fig. 2) laminated to a planar frame member (element 17 in Fig. 1, col. 3, line 54 – col. 4, line 4). Both references have the same problem solving area, namely providing efficient means of switching. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fritz and Feller et al. solution by adding an active material bender laminated to a planar frame member according to Brohard, because as well known in the art of piezo-electric elements design, the component layers of the piezo element are always laminated.

#### ***Allowable Subject Matter***

Claims 8, and 10 – 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

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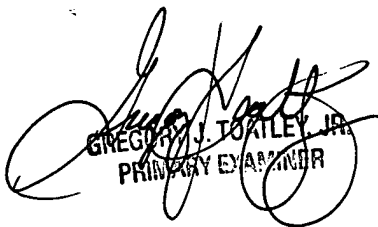
limitations of the base claim and any intervening claims. A reason for that is that Claim 8 includes limitations regarding details of the invented switching mechanism, such as a planar slide member and a latching mechanism being used together with the active material bender, which could not be found in the collected prior art of the record.

### ***Conclusion***

The prior art made of record not relied upon is considered pertinent to applicant's disclosure: US 6,046,418, US 4,812,698, US 6,472,625, US 6,323,581.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.  
03/10/2004



GREGORY J. TOOLEY, JR.  
PRIMARY EXAMINER